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Incidence of invasive cervical cancer in the Swiss canton of Vaud, and a note on screening

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ABSTRACT Age adjusted incidence rates (World standard) from invasive cervical cancer in the Swiss canton of Vaud decreased from 17·7/100 000 in 1968–70 to 9·9/100 000 in 1983–85. The decline was substantial in younger middle age, but no appreciable trend was observed in women over 70. This is consistent with available interview based information on the pattern of cervical screening in the Swiss population. Although there was no organised screening programme in Switzerland, over 80% of women aged 20–44 and 65% of those aged 45–64 reported one or more screening smears over the previous 3 years, compared to only 22% of women aged 65 or over. In the last calendar period, there was an apparent increase in the incidence of invasive cervical cancer (from 2·5 to 6·1/100 000) in women aged 25–29. Although based on small absolute numbers, this is in agreement with incidence and mortality data from other countries, and may therefore confirm a change in risk factor exposure in younger women.

Studies on trends in incidence and mortality from cervical cancer in various countries and age groups in relation to the various screening policies adopted have provided important evidence to support and quantify the role of screening programmes in the reduction of mortality from cervical cancer. The most convincing evidence has come from the Nordic countries, where the fall in mortality from cancer of the cervix has been greater in countries most widely covered by organised screening programmes (Iceland, Sweden and Finland, as compared to Denmark or Norway), and, within each country, has been restricted to the age groups covered by screening.^{1 2}

Besides screening, analyses of trends in invasive cervical cancer incidence and mortality may prove useful in order to understand the changing pattern of risk factor exposure in subsequent generations. For instance, a substantial increase in death rates from cervical cancer has been observed among British women born since 1935.^{3 4} Similar upward trends have been observed in Queensland, Australia,^{5 6} but not in various other western countries, including the United States.^{7 8}

In order to provide further information on the issue, we examined incidence data from the Cancer Registry of the Swiss canton of Vaud, in relation to available data on screening patterns in the Swiss population.

Methods

Cervical cancer incidence data for the period 1974–85 were abstracted from the population based Vaud Cancer Registry file, which includes data concerning incident cases of malignant neoplasms in the Canton (which has a population, according to the 1980 Census, of about 530 000 inhabitants).^{9 10}

Information collected by the register includes general demographic characteristics of the patient (age, sex, municipality of residence), site and histological type of the tumour according to the standard International Classification of Diseases for Oncology,¹¹ and time of diagnostic confirmation.

Incidence data for the period 1968–73 were derived from an ad hoc retrospective incidence survey conducted by the director of the Cancer Registry.^{12 13} Estimates of the corresponding incidence rates were obtained through the application of registration rules and the utilisation of sources which were the most comparable with those routinely available to the local cancer Registry.

The present series comprises 868 new cervical cancer primaries (ICD-O T : 180·0–180·9). In situ as well as other non-specified uterine neoplasms were excluded. Histological confirmation was performed in about 90% of the cases.

Age specific as well as overall and 35–64 years age standardised incidence rates (Vaud 1980, and World standard population) were computed.

Information on cervical smear utilisation in Switzerland was derived from the Swiss National Health Survey "SOMIPOPS" which has been described elsewhere.¹⁴ Briefly, a random sample of 5836 adults aged 20 or over was selected within strata of nationality (Swiss citizens v foreign residents) and (for Swiss citizens only) municipality of residence, combining a simple random sampling without replacement and a cluster sampling (at least eight individuals for each municipality). Data were collected through a self-administered questionnaire, followed by a personal interview arranged for each respondent. The overall participation rate (completed questionnaire plus interview) was 73% (70% for Swiss citizens, 85% for foreign residents), thus leaving a total of 4255 subjects (3419 Swiss and 836 foreigners).

Along with information about socio-demographic characteristics, general lifestyle habits, current health status, history of selected diseases and frequency of health service utilisation, data were collected on cervical screening history (ever screened and time since last smear). Validation and checks for data reliability were obtained, whenever possible, from independent integrating sources (eg, health insurance data).

Results

The age curves of cervical cancer incidence in three subsequent 6 year calendar periods are plotted in the figure. Consistent and substantial falls in incidence

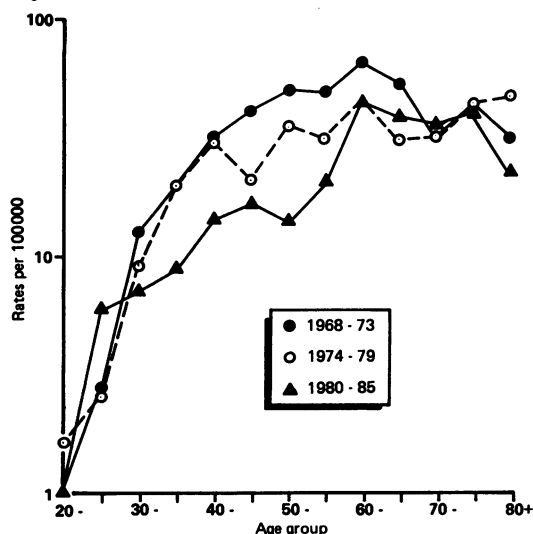


Figure Trends in age-specific incidence rates of invasive carcinoma of the cervix uteri in the Swiss Canton of Vaud, 1968–1985.

were evident in women aged 30 to 64. No apparent change in rates was observed above age 64, while in younger women (before age 30) there was an indication of increased incidence over the most recent calendar years considered: in the age group 25–29, seven cases were registered (6.1/100 000 women) over the period 1980–85, as compared with three in each of the two preceding 6 year periods (2.5/100 000 women). Overall age standardised (on the World standard population) incidence rates fell from 17.7/100 000 in 1968–70 ($n=188$), to 9.9 in 1983–85 ($n=131$), and truncated rates (35 to 64 years) from 52.5 ($n=124$) to 19.2 ($n=62$) (table 1). Marked downward trends were evident up to the early 1980s, but rates have apparently levelled off around the 1980–82 rates over more recent calendar years.

Information derived from the 1981–83 Swiss National Health Survey¹⁴ on pattern and frequency of cervical smear utilisation is given in table 2. Over 80% of younger women (age 20 to 44) had one or more screening smears within the last 3 years, and only 13.5% were never screened. The proportion of women not reporting a recent smear increased in older middle age, particularly in women over 65, among whom only 22.5% reported a smear over the last 3 years.

Discussion

The present study showed an approximately 40% decrease in incidence rates from invasive cervical cancer between the late 1960s and the early 1980s in the Swiss canton of Vaud. This was concentrated in younger middle age, while no apparent fall was evident above 70 years. This is consistent with available information on the pattern and frequency of utilisation of cervical screening among Swiss women, which covered most of the population in younger middle age, but less than 25% of women over 65.

Assuming an overall coverage of the population of about 65% at a 3 year interval, as derived from interview based data, the estimated decline in incidence is comparable with the Scandinavian data: the falls in mortality between 1963 and 1982 were 50% and 34% in Finland and Sweden, where the estimated coverages were 75% and 70% respectively, and the recommended screening intervals 5 and 4 years.²

The major difference between the Swiss and the Scandinavian situation (with the exception of Norway)² is that there is no organised programme in Switzerland, screening being totally spontaneous and only occasionally assisted by information campaigns. Nonetheless, the increased screening frequency in Swiss women has probably led to an appreciable impact on invasive cervical cancer rates, though this is far from the optimal effect obtained in countries such as Iceland where there is an organised nationwide

Table 1 Trends in age standardised (Vaud 1980 and World Standard Population) incidence rates* for cervical cancer cases from the canton of Vaud, Switzerland, 1968–1985

Period	Overall rates			Truncated (35–64) rates		
	Adjusted on		Number of cases	Adjusted on		Number of cases
	Vaud 1980	World		Vaud 1980	World	
1968–70	25.0	17.7	188	43.5	42.5	124
1971–73	19.8	14.7	155	34.9	35.4	103
1974–76	18.5	13.2	146	33.2	33.3	97
1977–79	17.7	11.4	142	26.0	25.4	77
1980–82	12.7	8.9	106	18.4	18.5	56
1983–85	15.5	9.9	131	19.6	19.2	62

* Per 100 000 women

Table 2 Percentage distribution of women included in the 1981–83 Swiss National Health Survey* according to age group and time since last smear. Number of women in parentheses.

Age	Time since last smear					Total % (n)
	< 1 yr % (n)	1–3 yrs % (n)	> 3 yrs % (n)	Never screened % (n)		
20–44 yrs	59.0 (605)	21.2 (218)	6.2 (64)	13.5 (139)	100 (1026)	
45–64 yrs	38.9 (245)	24.8 (156)	21.3 (134)	15.1 (95)	100 (630)	
≥ 65 yrs	11.6 (33)	10.9 (31)	26.1 (74)	51.4 (146)	100 (284)	
Total	45.5 (883)	20.9 (405)	14.0 (272)	19.6 (380)	100 (1940)	

* Reference 14

screening programme, resulting in an 84% fall in mortality from 1965 to 1982²; and it has probably also been achieved at substantially greater cost (considering, for instance, that 59% of women aged 20–44 reported a screening smear within the year before interview).¹⁵

These inferences between trends in cervical cancer incidence and screening patterns are in our view reasonable in terms of confirming the evidence from other countries. Nonetheless, some caution is advised in interpreting the data, on account of limitations due to the relatively small absolute numbers and to the application of interview based data on cervical screening obtained from a national sample to the population of the canton of Vaud.

A further interesting suggestion emerging from this study is the apparent increase in invasive cervical cancer incidence among younger women (aged 25 to 30) over the most recent calendar years. Although based on very small numbers (seven cases), this change in rates is in agreement with the suggestion from an age/period/cohort analysis on Swiss national death rates¹⁶ as well as with mortality data from Britain^{3,4} or

incidence data from Australia,⁵ and therefore deserves careful monitoring over the coming years.

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